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R. H. ECKELBERRY.....*Editor*
SHIRLEY LIPSON.....*Assistant Editor*

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Educational Research Bulletin

APRIL 13, 1960
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A Portable Mathematics Laboratory for In-service Teacher Education[1]

By CATHARINE M. WILLIAMS

Miss Williams is assistant professor and research associate in the Bureau of Educational Research and Service at Ohio State University.

TEACHERS of Grades I through VIII are providing instruction in arithmetic to one out of every six members of the nation's population. Even though so many children are involved, the quality of what generally takes place during the daily arithmetic period is disappointing. Arithmetic is the subject in which most elementary-school pupils do their poorest work. Unfortunately, too, most pupils are markedly less proficient in problem-solving —that important aspect which calls for intelligent application of processes and principles—than in computation skills. When children reach junior and senior high school, few elect mathematics; the majority take only the mathematics courses that are specifically required. By so doing, students close the door to opportunities both for learning how challenging the subject can be and for entering those occupations for which mathematical proficiency is a basic requirement.

We have reason to be deeply concerned about the quality of arithmetic instruction throughout the elementary grades. Research reveals that an appalling number of elementary-school teachers are ill-prepared for the important task of teaching arithmetic; many of them are the victims of unfavorable mind-set. Several studies have brought to light the fact that the majority of elementary-school teachers of arithmetic admittedly fear and

[1] The author conceived this plan for a portable mathematics laboratory three years ago. At no time since that date have there been funds available for putting the plan into operation. It is set forth here with the hope that others may find ways of adapting it to their needs.

dislike the subject.[2] Such mind-set stems from the fact that the teachers are the products of a mathematical education which placed a premium on *knowing about* rather than on *knowing;* on memorizing book definitions and following prescribed rules of operation rather than on thinking and analyzing—the sort of learning which is characterized by experimenting to find solutions, generalizing from one's own experimental evidence, and testing to see whether the generalizations arrived at are valid. In view of the narrowly prescribed mathematical background of many elementary-school teachers, it is not difficult to understand their lack of security in situations which call for building a real understanding of and love for the subject.

Unfavorable mind-set is but one evidence of teacher insecurity concerning arithmetic. The teacher's edition of practically every leading arithmetic textbook contains all sorts of patterned how-to-do-it introductions to topics, step-by-step explanations, and step-by-step solutions to problems. Thereby problems become mere exercises. Publishers report that according to their polls teachers actually *want* such recipes for teaching. The widespread use of workbooks to supplement textbook exercises is yet another evidence that many teachers are reluctant to use a more creative approach. Use of the workbook routinizes classroom procedures and stereotypes arithmetic activities; it makes only a minimal demand on either the teacher's knowledge of the subject or his skill in teaching, since every exercise has a ready-made pattern and the answers are supplied. The cookbook type of teaching which frequently results from use of these materials in no way meets individual needs. Moreover, it stifles individual initiative and imaginative approach on the part of either the teacher or the student.

There is also a very large group of elementary-school teachers who know the subject well but are unable to communicate to most of their pupils the *meaning* of arithmetical processes and principles. Hence, few of the pupils enrolled in their classes develop either proficiency or an abiding interest in arithmetic. Although many new instructional materials have been developed for the teaching of arithmetic, these teachers are unaware of

[2] Dutton, Wilbur H. "Measuring Attitudes Toward Arithmetic," *Elementary School Journal,* LV (September, 1954), pp. 24–31; Rappaport, David. "Preparation of Teachers of Arithmetic," *School Science and Mathematics,* LVIII (November, 1958), pp. 636–43; Weaver, J. Fred. "Crucial Problem in the Preparation of Elementary-School Teachers," *Elementary School Journal,* LVI (February, 1956), pp. 255–61.

them. Given proper guidance in the use of such tools, teachers could rapidly upgrade their programs so that their pupils could learn arithmetic and like it.

Some arithmetic teachers are, of course, doing a fine creative job of teaching the subject. In their classrooms pupils are learning to *know* arithmetic rather than just to *know about* it; they are enjoying the challenge of solving problems, of experimentally finding out for themselves the why's and how's of the processes. The pupils are all progressing—each at his own pace. This is good, but it is not good enough, because only a small number of the pupils enrolled in elementary schools are being so skillfully taught. The sort of teaching which will provide all children in elementary schools with full learning experience is needed.

A PROMISING aspect of the present situation is the fact that a large number of the insecure teachers are aware of their insecurities and are sincerely anxious to overcome them. This points to a very real need for developing an in-service education program in the teaching of arithmetic on a scale not yet attempted.

In order to upgrade the teaching of arithmetic in an entire school program, it is necessary to reach all the teachers in the system, preferably while they are on the job. Thus, while they are being confronted with the actual problems of teaching, they will have opportunities for trying new approaches and materials. They will also have strong motivation for sharing and discussing among themselves discoveries, evaluations, ideas, and problems.

Most important, elementary-school teachers must become confident and practiced in new ways of teaching arithmetic. This must be done not only to improve the mathematical performance of the pupil at the time, but also to generate a favorable mind-set toward quantitative thinking and advanced work in mathematics in later years. Precisely such a program, planned three years ago, is presented here. It is not likely that anyone will want to adopt it in its entirety, but it is necessary to see the whole plan in order to determine ways in which parts of it might be adapted by readers to meet their local needs.

The project, as originally planned, was to involve supervisory personnel in the development, experimental use, and evaluation of a portable mathematics laboratory for the purpose of improving attitudes, instruction, and achievement in arithmetic in the elementary curriculum. Thus, persons both on the campus and in

the field would collaborate in the venture, and the laboratory would provide school organizations with the basic resources to raise the level of arithmetical instruction and achievement throughout the state. The spirit of creativeness and experimentation would be a major element in carrying out the project.

Supervisory personnel are those most responsible for providing in-service help for elementary-school teachers. However, in their efforts to give their teachers the help needed in the area of arithmetic, most supervisors are blocked by their own mind-set, by lack of time set aside from other duties to permit them to organize good in-service education programs, and by lack of instructional materials of the right sort to help teachers learn new ways of teaching in their normal situations. The problem, therefore, is to help supervisors overcome these blocks so that they may in turn help their teachers approach arithmetic teaching creatively—with enthusiasm and skill.

THE project proposed to help supervisors by means of a program which would evolve through five stages: participating in a summer workshop to develop the portable mathematics laboratory, conducting in-service workshops for teachers and preparing for evaluation after a year's use of the laboratory, participating in another summer workshop for the purpose of evaluation and improvement, during this same summer involving a new group of supervisors in the project, and carrying the program to a new set of teachers for use in the next academic year.

First, sixteen selected elementary-school supervisors, representing a variety of teaching situations in the surrounding territory, would come to a campus workshop for a four-week period during which they would co-operate in creating and equipping a portable mathematics laboratory. Through this endeavor the supervisors would not only become thoroughly familiar with the new materials for arithmetic instruction but would also have a strong motive for evaluating them. Constant analyses of their own workshop experiences would provide bases for critical judgments as they laid tentative plans for conducting workshops for their teachers.

The portable laboratory as conceived by the writer was intended to bring to the attention of participating teachers the various types of instructional materials and their proper use.

These materials would include both commercially available resources and everyday items that could be made useful by applying imagination and skill. The following are potentially useful materials that might be incorporated in the laboratory:

1. Commercially prepared non-book materials such as an abacounter
2. Construction materials for devices to be prepared by the teacher or the teacher and the pupil
3. Projection equipment
4. Films (for example, *Understanding Numbers*) and filmstrips (for example, *The History of Measurement*)
5. Measuring devices, such as thermometers and liquid measures
6. Tape recorder and recordings (for example, Laura Zirbes' "Recordings for Teaching and Learning")
7. Wall charts (for example, "World Time Zones")
8. Manipulative materials, such as the abacus and inch cubes
9. Children's books (for example, *How Much and How Many,* by Jeanne Bendick)
10. Teachers' books on teaching arithmetic (for example, *Arithmetic: Children Use It,* by Edwina Dean)

There are several ways of making the mathematics laboratory portable. If funds are available, a small delivery truck of the Volkswagen type furnishes an efficient means of transportation. Specially designed carrying cases will be both space savers and time savers in packing and unpacking. However, a less expensive method is to use carrying cases designed to be transported in school buses at hours when they are not carrying children. If neither of these methods can be worked out, it is possible to fashion carrying cases from strong packing cartons and transport them in a privately owned station wagon. The writer suggests that two portable laboratories be assembled so that each could be available to the teachers for longer periods of time.

Second, the supervisors, individually, would have and use the portable laboratory for a three-week period during the academic year to conduct in-service workshops in their own local situations. It was intended that campus personnel would act in an advisory capacity during this year, maintain open lines of communication among the several supervisors, and involve all concerned in the record keeping necessary to make evaluation an integral part of the program.

In evaluating the program, varied kinds of information would be used. The supervisors would record their observations concerning the practices of individual teachers in teaching

arithmetic prior to the workshop and at periodic intervals thereafter. Members of the project staff would conduct recorded interviews with the teachers to discover their psychological outlook before and after the workshop, and with school administrators and others in influential positions who control development of arithmetic teaching. Other evaluative materials include statements written before and after the workshops by the participants indicating what they feel they need in order to improve their arithmetic instruction; an inventory of aids available to the teachers and their degree of use before the workshop and at periodic intervals afterwards; a critique of book-type materials and methods of using them; "diaries" kept by teachers to report and analyze their experiences in teaching arithmetic; collections of examples of good and poor teaching of arithmetic and of common difficulties and their solutions; tests of arithmetical competence given to the pupils; and records of formal and informal research undertaken by field participants as a result of involvement in the project. It is most important that regular contact be maintained between the campus staff and the supervisors, particularly during the in-service workshop sessions and in the pre– and post–data gathering periods.

Third, at the end of the first year, the supervisors would return to the campus for a summer workshop to evaluate their experiences with their in-service workshops, to re-evaluate the portable mathematics laboratory, and to work out further additions and improvements. At this stage planning for development of distinctive materials was anticipated by the writer. These included a *filmstrip* to show the contents of the portable mathematics laboratory and the techniques for labeling, packing, transporting, and exhibiting these materials; and a *handbook* which would contain the following: (1) a report of those experiences and procedures that had been found worth while; (2) annotated listings of all of the books and other materials which were used, whether or not they were a part of the mobile laboratory; (3) the findings resulting from the evaluations; (4) other values, activities, and problems which grew out of the workshop experiences; and (5) an accounting of those changes which took place in both teaching and learning as a result of the in-service education program. At this time the contents of two additional portable units would likely be needed for use in the expanded program during the coming academic year.

Fourth, during the same summer, the original group of supervisors working in teams of two would conduct eight district workshops for still other supervisors. In each workshop there should be approximately twenty-four participants.

Fifth, these workshops would prepare the new persons to make use of the portable mathematics laboratories for their own in-service workshops during the next academic year. During these latter two stages of the program, the campus personnel would continue to assist in carrying forward a co-operatively designed evaluation of both the teaching procedures and the pupils' achievement. This evaluation would be included in the handbook, to be completed as soon as possible after this stage of the project was finished. The filmstrip would also be prepared at this time. If the experimentation up to this point proved successful, the idea of the portable mathematics laboratory could be "packaged" in a form useful to state departments of education, teacher-education institutions, and local school districts.

Ways of adapting this over-all plan to less comprehensive programs of in-service education may now be explored. A single city might well engage its elementary-school supervisory staff in creating and equipping a portable mathematics laboratory which could be moved from building to building for an agreed-upon period—three weeks seems to be a desirable length of time. During this period the teachers would be engaged in intensive study of the materials by actually trying them out in their classrooms and then sharing experiences, ideas, and evaluations in group meetings. If the school system were located in a city having a teacher-education institution, arrangements might be made whereby advanced education students could take over the teachers' duties during a part of each day of the workshop in order to free the teachers for sessions. If no institution of this type were available, similar arrangements might be worked out with qualified members of the school's Parent-Teacher Association. A county school system of two or more adjoining counties might co-operatively carry forward an in-service program of teacher education in much the same fashion. A research specialist either from the local school system or from the outside could give valuable aid in developing evaluation techniques and procedures.

The laboratory idea might be used on a more limited scale

[*Continued on page 103*]

Characteristics of Effective Teachers

By FRANK M. CALABRIA

Mr. Calabria is on the faculty of Russell Sage College in Troy, New York. The study reported here was carried out while the author was on the staff of the State Education Department, Division of Research in Higher Education, The University of the State of New York.

WHAT makes a teacher effective is a subject of prime importance to everyone concerned with education. One conclusion drawn from various studies is that the characteristics which make a teacher effective form a complex of many interrelated variables requiring a multidisciplined approach in research. Current investigations tend to concentrate upon a few selected aspects of the subject rather than attempt to measure the totality of the teaching process. The present study follows this procedure and shares both its values and limitations.

The purpose of this study is to examine selected factors in the educational background and teaching experience of a group of "effective" secondary-school teachers of academic subjects in New York State. Four areas will be considered: undergraduate preparation in major field and professional education, teaching experience, certification status, and graduate training.

During the fall of 1957, the Division of Research in Higher Education of the State Education Department mailed to school administrators in New York a "Memorandum on Teacher Education and Certification," which described the vital contribution secondary-school teachers could make to the study of professional-training patterns for future teachers. To obtain the help of the teachers, school administrators were asked by the Division of Research in Higher Education to request the co-operation of secondary-school principals in their districts in nominating effective teachers of academic subjects. Since what constitutes an effective teacher is subject to individual interpretation, the principals were asked also to indicate the criteria they used in making their nominations. The most frequently mentioned qualities were: subject-matter mastery, motivation, dedication, co-operation, sense of humor, creativity, efficiency, control, discipline, standards, promptness with reports, methods, success with Regents' examinations, and generosity with personal time for students. In almost all cases, several criteria were used in choosing

each teacher. Thus an effective teacher is defined as one who has the qualities that principals consider essential for success in the classroom.

Over thirteen hundred secondary-school teachers were nominated as "effective." An inquiry, including a personal data sheet to be completed by the teacher, was sent to each of them. Seven hundred and seventy agreed to participate; from this group 250 were selected for a check-list project. The remaining 520 were sent post-card inquiries concerning details of preparation and experience. Usable replies were received from 271 of these 520 effective teachers who were sufficiently motivated to co-operate in the study. The extent to which they are representative of those who were sent post-card inquiries or of the larger group of teachers who were initially nominated as effective could not be determined conclusively; however, an attempt at comparison was made.

Before beginning an analysis of the data, a word of caution is in order. The teachers in this study are classified according to the academic areas in which they do most of their teaching. Although most teach mainly in the area of their major training, this classification is not necessarily the same as the major field of training for all the teachers. It is possible, for example, in a mathematics-science combination that a teacher trained primarily in science is teaching more mathematics than science and vice versa.

In an attempt to determine how well this group represents the original distribution of effective teachers in the Teacher Education and Certification Study and the general distribution of teachers of academic subjects in New York State, a comparison was made, by subject area, of the percentages of teachers in each of these three classes. Table I shows that the distribution of academic teachers originally nominated as effective closely approximates the proportional distribution of teachers in each subject area in the New York State secondary schools. In comparison with the state-wide distribution, slightly more mathematics teachers and fewer English teachers were selected by their principals. The smaller group studied in this survey approximates the original selection of effective teachers more closely than it does the state-wide distribution of academic teachers; however, the representation of science and language teachers is slightly higher in the smaller group. From this analysis two observations can be made:

First, the distribution of effective academic teachers in New York State schools appears to approximate closely their proportional representation by subject area; that is, no one academic field has a disproportionately higher or lower number of effective teachers.

Second, the teachers in this survey are sufficiently representative of effective academic teachers in New York State secondary schools, so that the findings may be meaningfully applied to the original group in the Teacher Education and Certification Study.

In all three groups the distribution of men and women is approximately equal; for example, in the original group 47 per

TABLE I

PERCENTAGE DISTRIBUTION BY TEACHING FIELD OF TEACHERS IN SURVEY SAMPLE, IN TEACHER EDUCATION AND CERTIFICATION STUDY, AND IN NEW YORK STATE

Teaching Field	Survey Sample	Teacher Education and Certification Study	State-wide Distribution
(1)	(2)	(3)	(4)
English	21	24	29
Citizenship education	22	24	26
Mathematics	22	24	19
Science	20	17	18
Languages	15	11	8

cent were men and 53 per cent women. Some differences exist, however, in the academic fields. A relatively high percentage of women were chosen as effective teachers of English and foreign languages, whereas a fairly high proportion of men were selected in science and citizenship. In mathematics the distribution of men and women was approximately equal. Though different proportions of men and women are chosen as effective teachers of any one academic subject, these differences reflect the distribution of men and women teaching in each subject area rather than the superiority of one sex over the other in teaching a particular subject.

ONE major criticism of teacher education is that too much emphasis is placed upon courses in professional education, such as methods, practice, educational psychology, and the like, and not enough on the major subject field to be taught. Table II shows the median undergraduate credits earned by the teachers in this study in professional education and major-field areas, by teaching field, compared with minimum requirements for pro-

visional certification in New York State in 1957.[1] In all teaching fields the median number of credits in professional education courses is barely equal to the minimum requirements. In the major-field areas, however, the median number of credits is well above the minimum requirements, particularly in English, mathematics, and foreign languages. Thus, the teachers in this study as a whole were better prepared to meet the undergraduate requirements in their major fields than they were in professional education.

TABLE II

MEDIAN UNDERGRADUATE CREDITS* EARNED BY EFFECTIVE TEACHERS IN PROFESSIONAL EDUCATION AND MAJOR FIELD COMPARED WITH MINIMUM REQUIREMENTS FOR PROVISIONAL CERTIFICATION IN NEW YORK

	ENGLISH		CITIZENSHIP EDUCATION		MATHEMATICS		SCIENCE		LANGUAGE	
	Prof. ed.	Major field	Prof. ed.	Major field	Prof. ed.	Major field	Prof. ed.	Major field	Prof. ed.	Major field
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Minimum requirements .	18.0	18.0	18.0	30.0	18.0	15.0	18.0	30.0	18.0	18.0
Median credits earned	18.7	30.7	18.5	34.2	18.5	27.5	18.4	32.6	18.6	30.0

* Median credits were computed to minimize distortion of the original distribution.

This finding is substantiated by Table III which gives the percentage distribution of these teachers, by teaching field, who met the minimum credit requirements in professional education and in their major fields on the undergraduate level. The percentages, respectively, were 68 and 88. On the basis of this evidence, it appears that those teachers who were later judged effective placed a greater emphasis on major-field rather than on professional-education preparation in their undergraduate training. This poses the question: Does proportionately greater emphasis placed on major-field preparation (presumably resulting in greater mastery of subject-matter in the selected teaching field) significantly enhance the likelihood of a teacher's becoming effective?

Further comparison can be made by analyzing to what extent credit requirements were met in each academic field. The highest percentage of teachers meeting these minimum requirements

[1] Throughout the study the 271 effective teachers were rated according to the 1957 certification requirements, even though 53 per cent of the group were certified prior to 1950. Practically all of these teachers met certification requirements at some time; there is evidence that approximately 1 per cent of the group lacked certification, which could be attributed to incomplete information (*see* Table VI).

was in foreign languages (100 per cent), the lowest in citizenship education and science (75 per cent). Credit requirements in major-field areas are highest for those preparing to teach in science and citizenship education; this may account, in part, for the low percentage of teachers who met the minimum requirements. The question arises whether the higher requirements in these two areas are more warranted than would be comparably high requirements in any other academic area—for example, in English.

TABLE III

PERCENTAGE DISTRIBUTION OF EFFECTIVE TEACHERS, BY TEACHING FIELD, WHO MET MINIMUM CERTIFICATION REQUIREMENTS IN UNDERGRADUATE PROFESSIONAL EDUCATION AND MAJOR FIELD

	ENGLISH $N=57$		CITIZENSHIP EDUCATION $N=59$		MATHEMATICS $N=60$		SCIENCE $N=53$		LANGUAGE $N=42$		TOTAL $N=271$	
	Prof. ed.	Major field	Prof. ed.	Major field	Prof. ed.	Major field	Prof. ed.	Major field	Prof. ed.	Major field	Prof. ed.	Major field
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Met requirements..	70	96	63	75	68	93	64	75	75	100	68	88
Did not meet requirements..	30	4	37	25	32	7	36	25	25	..	32	12

In addition to teaching in their major fields, 69 of the 271 teachers (25 per cent) have taught in two or more major fields. A recent study of secondary-school teachers in upstate New York showed that a similar proportion of academic teachers were teaching in two or more major fields.[2] Of the 69 in this study, 38 fulfilled minimum requirements for provisional certification in their second teaching field—usually a double major—while 31 did not. The highest number teaching in two or more major fields was in English and foreign languages, while the lowest was in citizenship education and science. Though almost half of the foreign-language teachers in this survey teach in two or more subject areas, more than half did not meet the minimum requirements for provisional certification in the second teaching field. These findings must be interpreted cautiously because the number of cases in the group studied is small.

[2] Crane, E. H., and Doughty, K. "The Characteristics of Teachers in New York State Schools Excluding New York City, 1956–57." (Unpublished Manuscript).

Approximately 80 per cent of the total group did some practice teaching. Table IV indicates that 30 per cent of the teachers who did engage in practice teaching spent between nineteen and twenty-four weeks in it, while more than half of the total group spent between seven and twenty-four weeks. Some differences in the amount of practice teaching were found among teachers of various subjects. These differences are most directly reflected in the modal number of weeks as well as in the percentage of

TABLE IV

PERCENTAGE DISTRIBUTION OF EFFECTIVE TEACHERS WHO ENGAGED IN PRACTICE TEACHING BY NUMBER OF WEEKS SERVED

Number of Weeks	English $N=57$	Citizenship Education $N=59$	Mathematics $N=60$	Science $N=53$	Language $N=42$	Total $N=271$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
None	19	17	19	24	33	22
1– 6	30	17	14	30	12	20
7–12	12	21	15	6	14	14
13–18	14	15	13	15	12	14
19–24	25	30	39	25	29	30

teachers having no practice teaching. Mathematics, for example, has the largest percentage of teachers spending the most time in practice teaching, whereas foreign languages has the highest percentage receiving no practice teaching.

ALMOST 70 per cent of the total number of the teachers in this study have more than ten years of actual teaching experience;

TABLE V

PERCENTAGE DISTRIBUTION OF EFFECTIVE TEACHERS BY YEARS OF TEACHING EXPERIENCE

Number of Years	English $N=57$	Citizenship Education $N=59$	Mathematics $N=60$	Science $N=53$	Language $N=42$	Total $N=271$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1–10	26	34	27	41	24	31
11–20	25	34	32	28	24	29
21–30	33	25	22	19	28	25
31–40	16	7	19	12	24	15

40 per cent have more than twenty years. As with practice teaching, there is some variability in the amount of secondary-school teaching experience among teachers of different academic subjects. Table V shows that the largest proportion of science teachers, for example, have the least number of years of teaching

experience (from one to ten), while approximately half of the English and foreign-language teachers have the most years of teaching experience (between twenty-one and forty). Why the highest percentage of science teachers were chosen as effective despite relatively less teaching experience is an interesting question. In summary, both practice teaching and considerable experience in secondary-school teaching may well be determining factors in the effectiveness of teachers of academic subjects.

TABLE VI

PERCENTAGE DISTRIBUTION OF TYPE OF TEACHING CERTIFICATE HELD BY EFFECTIVE TEACHERS

Type of Certificate	English $N=57$	Citizenship Education $N=59$	Mathematics $N=60$	Science $N=53$	Language $N=42$	Total $N=271$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Permanent	87	86	88	90	94	89
Provisional	9	5	2	2	2	4
Renewable	2	7	8	4	..	4
Temporary	2	2	..	2	2	1
Other	..	..	2	2	..	1
None	..	..	..	..	2	1

The teachers in this survey have qualified for a variety of teaching certificates; however, almost 90 per cent are permanently certified to teach academic subjects. Table VI reveals the type of certificate held by the teachers in each academic area.

The time periods during which these certificates were received are shown in the following list:

Year	Per Cent Certified
1920–29	17
1930–39	23
1940–49	13
1950–58	47

The largest percentage, almost 50 per cent, were received during 1950–58. This may be partially explained by the fact that increases in teaching salaries and promotion have become more closely related to completion of graduate work leading to the Master's degree or its equivalent.

The extent of graduate training of teachers in this study is shown in Table VII. Eighty-six per cent have Master's degrees or the equivalent, and 67 per cent graduate credits beyond the Master's degree. Crane, in a recent study of levels of education of professional personnel in New York State, found that 33 per cent of the professional teaching personnel had acquired a Mas-

ter's degree or its equivalent.[3] Teachers in the group studied, then, hold more than twice as many Master's degrees or the equivalent as all professional teaching personnel in New York State.

Almost one-fourth (21 per cent) of the teachers who have credits beyond the Master's level have twenty-five or more, and 37 per cent have thirteen credits or more. Also, of more than passing interest is the fact that 85 per cent of the science teachers

TABLE VII

PERCENTAGE DISTRIBUTION OF EFFECTIVE TEACHERS ACCORDING TO GRADUATE CREDITS

NUMBER OF CREDITS	ENGLISH $N=57$	CITIZENSHIP EDUCATION $N=59$	MATHEMATICS $N=60$	SCIENCE $N=53$	LANGUAGE $N=42$	TOTAL $N=271$
(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Beyond Master's					
25 or more	13	17	21	24	22	21
13–24	10	25	14	15	15	16
1–12	43	29	28	31	22	30
None	34	29	37	30	41	33
	Master's or Below*					
Master's degree .	69	78	75	68	58	70
30 or more.....	20	11	8	17	26	16
Less than 30....	11	11	17	15	16	14

* The percentages in the columns devoted to the Master's degree and below are based on a total of 256 teachers since no information was available for the rest. The total number of teachers reporting in each academic area was: English, 55; citizenship education, 57; mathematics, 53; science, 53; and foreign languages, 38.

who were selected as effective teachers in this survey have a Master's degree or its equivalent, and that approximately one-fourth of this group have twenty-five or more credits beyond the Master's level. This interest in continuing their education could reflect an intrinsic desire to broaden their educational backgrounds while keeping abreast of recent developments in their particular fields. There seems to be a direct relationship between the facts that these teachers were chosen and that a large number of them have continued their graduate studies.

THE findings in each of the four areas examined—undergraduate preparation in the major field and professional education, teaching experience, certification status, and graduate training—may be summarized as follows:

[3] Crane, Edmund H. "Teachers' Qualifications Are Improving." *Bulletin to the Schools*, XLIV (January, 1958), p. 173.

First, the teachers chosen as effective in this survey met current certification requirements at the time they began teaching. Over the years, however, they have added to their original preparation much more in subject-matter fields than in professional education. The findings also reveal that one-fourth of those selected are teaching in two or more academic areas. More than half of this number met the minimum requirements to teach in a second academic field.

Second, a large majority of those selected as effective teachers have had some practice teaching in their undergraduate training. Well over half of the teachers have, in addition, more than ten years of teaching experience in secondary schools.

Third, almost 90 per cent of the teachers in this survey have a permanent teaching certificate in one or more academic subjects. Most of them have taken some graduate course work within the last eight years.

Fourth, more than three-fourths of the total group have a Master's degree or its equivalent, and two-thirds have taken graduate training beyond the Master's level.

These findings suggest that effectiveness in teaching may be directly related to mastery of subject-matter in the selected teaching field. In addition, a long apprenticeship of teaching in one's academic field may be a necessary requisite to effectiveness.

Also some provocative questions have been raised. It would be interesting to find out, for example, how many of these 271 effective teachers would have been so designated at the beginning of their careers. Or have their relatively long periods of experience, together with the additional preparation obtained in their teaching fields, contributed substantially to their development into effective teachers? In most other professions practitioners grow in service. This appears to be true also of education.

The Study of Values and the Minnesota Teacher Attitude Inventory

By ANTHONY C. RICCIO AND HERMAN J. PETERS

Mr. Riccio is assistant professor of education at University of Notre Dame. Mr. Peters is professor of education at Ohio State University.

THE *Study of Values* and the *Minnesota Teacher Attitude Inventory* are administered routinely in a number of teacher-education programs. Despite their widespread use, the investigators have been unable to locate any research pertinent to the relationship between scores achieved on these instruments. The present paper compares the performances of teacher-education students on the *Study of Values* and the *MTAI*.

The *MTAI* "is designed to measure those attitudes of a teacher which predict how well he will get along with pupils in interpersonal relationships, and indirectly how well satisfied he will be with teaching as a vocation."[1] The test is composed of 150 attitudinal items to which a student must respond on a five-point scale. There is evidence that the *MTAI* predicts the type of classroom atmosphere a teacher will maintain as well as intelligence tests predict college grades.[2]

The second instrument, the *Study of Values*, is based on E. Spranger's contention that a person can best be described in terms of his interests and intentions. Spranger depicts six ideal types of people: theoretical, economic, aesthetic, social, political, and religious.[3] A student who scores high in one of these categories does so at the expense of his performance in the other categories. Basically the test is a measure of the relative importance that an individual places on particular kinds of activity.

THE students who served as subjects for the comparison were enrolled in a first course in education at Ohio State University in the autumn quarter of 1958–59. The study group was composed of 488 students—365 women and 123 men; approximately 80 per cent were Freshmen.

[1] Cook, Walter W., *et al.* Manual to *Minnesota Teacher Attitude Inventory*. New York: Psychological Corporation, 1951, p. 3.

[2] *Ibid.*, pp. 13–14.

[3] Allport, Gordon W., *et al.* Manual of Directions to *Study of Values: A Scale for Measuring the Dominant Interests in Personality*. Rev. ed. Boston: Houghton Mifflin Company, 1951, pp. 12–14.

The relationship between performance on the *MTAI* and the *Study of Values* was explored in two ways. First, product-moment correlations were found for the *MTAI* and the individual scales of the *Study of Values*. Second, the test of significance of data, as outlined by Edwards,[4] was used to determine any statistically significant differences in comparing the variances of the *MTAI* scores of men and women in terms of their dominant value patterns. Twenty-three dominant value patterns were found among members of the group being studied. With sex held constant, the differences between the mean *MTAI* scores of all dominant value groups comprising eight or more subjects were tested. This resulted in a consideration of fourteen value patterns. The .05 level of confidence was selected as the criterion for significance.

The following table shows the coefficients of correlation (tested for .01 significance) for the *MTAI* and each of the six scales of the *Study of Values:*

Scale	*r*
Theoretical	—.002
Economic	—.016
Aesthetic	.130*
Social	.085
Political	—.138*
Religious	—.036

* Significant at the .01 level of confidence.

Only two of the six correlation coefficients (aesthetic, .13; political, −.138) are significantly different from zero; however, these coefficients are so small that they are negligible on a practicable basis. Apparently there is little relationship between the elements measured by the *MTAI* and the individual scales of the *Study of Values.*

The numbers of men and women used in testing the significance of data for the *Study of Values* follow:

Dominant Values	Men	Women
None	19	57
Theoretical	12	8
Economic	8	17
Political	16	25
Religious	17	96
Aesthetic	..	22
Social	..	32
Social-Religious	..	53
Political-Religious	..	14

[4] Edwards, Allen L. *Statistical Methods for the Behavioral Sciences.* New York: Rinehart and Company, Inc., 1954, pp. 315–38.

TABLE I presents the analysis of variance in terms of the *MTAI* scores for the five groups of men as determined by *MTAI* scores and the *Study of Values*. These results give an

TABLE I
ANALYSIS OF VARIANCE FOR MEN AND WOMEN WITH SUBSCORE MEANS OF VALUE CATEGORIES

SOURCE OF VARIATION	SUM OF SQUARES	DEGREES OF FREEDOM	MEAN SQUARE	*F*
(1)	(2)	(3)	(4)	(5)
	Men			
Between groups	1,569	4	392	.624*
Within groups	42,076	67	628	
Total	43,645	71		
	Women			
Between groups	12,749	8	1,594	.917*
Within groups	547,126	315	1,737	
Total	559,875	323		

* Not significant at .05 level.

F value which indicates no statistically significant difference in the means of these groups. Using the same procedures, the authors found no statistical differences between the variance on *MTAI* scores of the nine groups of women and the *Study of Values* subgroupings.

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A Portable Mathematics Laboratory

[*Continued from page 91*]

also. When it is not possible to involve an entire school system, an interested group of supervising principals or teachers or both might secure sufficient funds to develop a portable laboratory for use among themselves.

Through creative thinking and co-operative utilization of resources such as has been indicated by plans for the shared use of a portable mathematics laboratory, it is feasible to develop a challenging in-service education program on a large scale. Until some large-scale program for deepening the insights and raising the aspirations of elementary-school teachers of arithmetic is inaugurated, many elementary-school children will continue to be deprived of a rich and rewarding learning experience in arithmetic.

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EDITORIAL COMMENT

Careful Study Needed

LAST month we discussed the recent recommendations of the Ohio Education Association regarding teacher certification and the action of the State Board of Education with respect to them. We described briefly the history of the cadet certification plan in this state, which has done much to meet the serious shortage of elementary-school teachers and to reduce the number of temporary certificates.[1]

Our purpose here is to discuss further the cadet certification plan, which the O.E.A. would eliminate. As we stated last month, this certificate is granted to a person who completes an approved two-year course in general and professional education, including student teaching. The certificate is valid for four years and may be renewed for successive periods of four years on completion of twenty-four semester hours of approved additional training for each renewal, until the Bachelor's degree and the standard provisional certificate have been obtained.

There is widespread dislike for the cadet program in the colleges of the state. John Dale Russell, in a study made for the Ohio College Association in 1956, reported: "The almost universal testimony of the people in the institutions of higher education is that this 'cadet teacher' program has been a bad thing for the public schools of Ohio and for the [higher] educational institutions."[2] There is no reason to doubt the facts as reported by Mr. Russell or to suppose that the dislike has lessened since his study was made.

Whether the belief that the cadet program is bad for the public schools is well founded is another matter. The weight to be given to such "almost universal testimony" depends upon the relevant knowledge and understanding possessed by those who testify. This knowledge and understanding is not impressive. Many college people are woefully ignorant about the problems and needs of the public schools, especially the elementary schools.

[1] "Ill-Advised Recommendations," EDUCATIONAL RESEARCH BULLETIN, XXXIX (March 9, 1960), pp. 72–75.

[2] *Meeting Ohio's Needs in Higher Education.* [Wooster, Ohio]: Ohio College Association, 1956, p. 50.

In the absence of more information concerning the credibility of Mr. Russell's witnesses, we are justified in discounting heavily the findings based on their testimony.

With respect to the effect of the cadet program on colleges and universities, the witnesses are, of course, better informed. In this connection, Mr. Russell reports:

> The general conclusion from the study . . . of the terminal programs of less than degree length in Ohio institutions is that such programs do not flourish in the environment of a four-year degree granting institution. . . . The reason . . . seems to be that the faculty and students alike tend to look down upon the terminal program as something inferior if standard degree programs are available in the same institution.[3]

In passing, it should be noted that Mr. Russell's labeling the cadet program as a "terminal program" is unfortunate. As we have seen, it is not a terminal program; to treat it as such is to confuse the issue and vitiate the conclusions.

IN SUPPORT of the cadet program, two arguments can be advanced. First is the increased effectiveness of college courses for students who have had a year or more of experience in the field. Undergraduate students often find a good many of their college courses, particularly the professional ones, highly theoretical (in the bad sense of that term) and of little value. After these students have had experience in the field, they are likely to find the same kind of courses much more meaningful and valuable. The traditionally trained teacher almost certainly does not receive as much benefit from many of his upper-division courses as one who has been on the firing line. This disadvantage is only partially compensated for by his observation, "participation," and student-teaching experiences.

The second argument has to do with the quality of work that cadet teachers have done in the classroom. There is a considerable amount of evidence that they have made very creditable records. R. G. Drage sent evaluation forms to county, city, and exempted-village superintendents under whom 276 cadet teachers had worked or were working. All the forms were returned. Drage summarized the replies as follows: ". . . not only did the super-

[3] *Ibid.*, pp. 50–51.

intendents rate the scholar-teachers very high . . . but . . . these executives commented very favorably concerning the calibre of the classroom work being performed. . . ."[4]

Similar evidence regarding the quality of work of cadet teachers was presented by Christine Van Gorden and H. I. Von Haden at the meeting of the Teacher Education Section of the Ohio College Association on April 11, 1959. They studied the regular superintendents' reports on the work of one hundred unselected cadet teachers and one hundred trained in the conventional way. The ratings of the cadets compared favorably with those of the "regulars." On the basis of these and similar findings, some of those who are working for the discontinuance of the cadet program admit that the cadets' record in the field has been good.

All of this does not mean that the cadet program should be continued indefinitely. It does indicate that the program should be studied much more thoroughly than it has been. A useful approach would be to study two groups of teachers who had entered college six years earlier and had received Bachelor's degrees. One group would comprise those who had four years of college followed by two years of teaching; the other, those who had a two-year cadet program in college followed by four years of teaching and college study. Such a study, if the subjects were matched with respect to intelligence and other factors, would be much fairer to the cadets and should produce more valid results than the studies mentioned earlier.

As we consider the future of teacher education, we should keep our basic purpose clearly in mind. It is not to simplify the problems of the college people or to exalt artificially the status of the teaching profession. It should be to provide the best possible education for our children. More specifically, it should be to work out that combination of practical field experience and academic study that will produce the best teachers.

R. H. E.

[4] Drage, R. G. "The Ohio Scholarship Program for the Preparation of Public Elementary School Teachers." 1956. A doctoral dissertation on file in the library of Ohio State University. P. 143.

READINGS

Books to Read

RICKOVER, H. G. *Education and Freedom.* New York: E. P. Dutton and Company, Inc., 1959. 256 pp.

The opening chapters of this book offer a challenge to persons interested in improving secondary schools. They present objectives for modern schools which, if adopted, would bring about fundamental changes in organization, content, and method. For example, it is stated that citizens qualified to solve the problems of the nuclear age "must be given freedom to work out their own problems and to assume responsibility for what they do" (page 19). "Somehow every organization must make room for inner-directed, obstreperous, creative people; sworn enemies of routine and the *status quo,* always ready to upset the applecart by thinking up new and better ways of doing things" (page 22). "The schools . . . must concentrate on bringing the intellectual powers of each child to the highest possible level. Even the average child now needs almost as good an education as the average middle- and upper-class child used to get in the college-preparatory schools" (page 31).

Recommendations for attaining these goals tend to leave the informed reader confused. For example, to prepare the citizen for the nuclear age, a return to the classical education of the eighteenth and nineteenth centuries is recommended. Although Mr. Rickover praises the Russian educational system, he reminds the reader of Eric Fromm's quotation: ". . . no man must be the means for the ends of another . . . every man is an end in himself" (page 32). The English system of education is also praised, although America has far outstripped England in the production of creative mathematicians during the past two decades.

In the chapter "The Meaning of a Profession: Engineering," this book makes another important contribution to solving the problems involved in improving our schools. Here the roles of the layman and the professional are defined. It is the duty of the layman to determine goals and to judge results, but it is the obligation of the professional to determine methods and procedures. Basic to all professions is "the obligation to reject lay direction in the performance of professional work—that is, the duty to maintain professional independence" (page 64).

The major weaknesses of this book are found in its treatment of purely professional matters. Mr. Rickover fails to recognize the political, social, and economic needs of our students. He misinterprets the proposals of recognized educational leaders and movements and fails to take into account the available documented evidence concerning the outcomes of certain

school programs. The book overgeneralizes and makes statements contrary to fact. Because of these shortcomings, it cannot be considered an authoritative document on problems of content and method. C. B. MENDENHALL

STROM, INGRID M. "The Role of Literature in the Core Curriculum." Bloomington, Indiana: Division of Research and Field Services, Indiana University, 1958. vi + 60 pp. (Bulletin of the School of Education, Indiana University, Vol. XXXIV, No. 3).

This bulletin, like all Gaul, has three parts. The first section (Chapters I–III) discusses the role of literature in human life and describes ways of individualizing the pupils' reading experiences in typical units employed in the core program in junior high schools. The second section (Chapter IV) presents annotated lists of books of fiction and titles of short poems that may be used in a seventh-grade unit on "Growing Up in America," as well as suggestions for nonfiction, fiction, and poetry for an eighth-grade unit on "Promoting Better Home and Family Relations" and a ninth-grade unit on "Promoting World Understanding." The third part of the bulletin consists of an extensive bibliography of books, pamphlets, and magazine articles dealing with the core program, all of which were published in the decade 1947–57.

The chapter on "Adapting Instruction in Reading to Individual Differences" is concise, informative, and practical. The recommendation is made that the schools should provide many easy, attractive, and generously illustrated books, such as James Daugherty's fast-paced *Daniel Boone* and Robert Lawson's engaging account of Franklin's career, *Ben and Me,* for the slow or reluctant reader, and also make available more mature books such as Conan Doyle's *Sherlock Holmes* and Willy Ley's *The Conquest of Space* for the superior reader.

The lists of fiction and nonfiction books include many popular and well-regarded authors and titles. The annotations are, in general, brief and illuminating, such as the following comment on Betty Cavanna's *Going on Sixteen:* "Julie at fourteen is suffering the growing pains of her years. Motherless, living on a farm, she is lonely, but finally manages to overcome her shyness" (page 23). Only occasionally in the long list of readings is there an inadequate comment, such as this statement about Merritt Allen's *Make Way for the Brave:* "This is the story of the Oregon quest" (page 16).

More difficulty seems to have been encountered in the preparation of the lists of suggested poems. While many of the selections are appropriate, it seems odd to come upon such adult poems as Longfellow's "My Lost Youth," Frost's "Birches," and Whitman's "I Hear America Singing" as suggested reading for seventh-graders in a unit on "Growing Up in America." One wonders, too, what "Casey at the Bat" is doing in this unit. True, Casey wore short pants, but they were baseball pants, and mighty Casey had long since put boyhood behind him when, on that never-to-be-

forgotten day in Mudville, he struck out with the bases loaded. And just for the record it might be added that the author of this classic of the diamond was Ernest L. Thayer, not Taylor as the list indicates.

WILFRED EBERHART

FLETCHER, C. SCOTT. *The Great Awakening: Including a Plan for Education for Leadership.* White Plains, New York: Fund for Adult Education, 1958. 20 pp.

A notation on the title page of this brochure states that the contents are "an elaboration of a recent address by C. Scott Fletcher, president, The Fund for Adult Education." It does not say where or when the address was given.

Mr. Fletcher has sharply contrasted some of the basic differences between education in Soviet Russia and in the United States so as to highlight our need for highly trained leadership. He then describes this need in top-level positions in government and business and suggests a course, or courses, of action designed to produce such leadership through continuing education.

Training for leadership, he believes, should consist of two parts: first, courses of study and discussion of vital issues; second, the deliberate cultivation of leadership by participation in community affairs. Study and discussion should take place on three levels—top brass, upcoming organization executives, and "all interested adults" (page 18).

Mr. Fletcher does not give an example of the first level but illustrates the second by reference to special programs being conducted at the University of Pennsylvania, Dartmouth, Williams, and other colleges where Bell Telephone and other companies are having their "middle management men" undergo liberal-arts training, even though they may have been liberal-arts undergraduates. In connection with the third level, Mr. Fletcher makes a strong plea for greater use of television. The author's plan is lacking in details and there is one notable omission—any consideration of leadership training in the professions.

ANDREW HENDRICKSON

HARTFORD, ELLIS FORD. *Planning a Teaching Career: a Guidebook for Beginning Students in Education.* Minneapolis, Minnesota: Burgess Publishing Company, 1958. xiv + 158 pp.

The reviewer's over-all impression of this guidebook is that it really is just that. It "guides" so well that it would be perfect for students in a correspondence course. New members of the college teaching staff charged with taking over sections of introductory courses in education could find firm footing in the instructional materials and textbook lists suggested here. A wide variety of good ideas is presented for student research, study, and action.

The organization of the guidebook is clear-cut and precise, similar

to that of a workbook. A list of twenty-five textbooks, any one of which could be included in a first course in education, is followed by pamphlet and brochure titles suggested as "a 'workshelf' of materials for continued use" (page xii) and carefully grouped under informative headings such as "On Teaching," "On Teacher Security and Welfare," and "On Teacher Aptitudes and Qualifications."

Textbooks, pamphlets, and brochures are to be used by students in their approach to the seven units and the twenty-five basic questions set forth in the text. The first two units are designed to aid the student in determining whether his interest in teaching is sound and whether he can become a good teacher. The third and fourth will help the student learn something about and appreciate the public schools, understand what is required of a teacher, and answer the question, "Can I do these things?" The fifth will guide the student through investigations of the elementary and secondary schools for general information and help him find the area for which he is best suited. Units six and seven encourage him to plan his teacher-education courses and experiences in such a way as to get the most benefit from them that he can—a sensible, practical approach to what is ahead. Other aids to the student, presented in each unit, are suggested activities, discussion questions, evaluation exercises, and references to audio-visual materials.

By providing multiple-page references to the twenty-five suggested textbooks for each of the twenty-five basic questions, the author has done a tremendous job. Is this spoon-feeding students? Or, in light of the multitude of demands upon the time and energy of everyone today, is this not really a sensible approach to streamlining the investigatory activities of students in the interest of spending less time searching for, and more time in actual use of, materials and data?

V. A. MACKAY
University of British Columbia

"A University Department Evaluates Its Curriculum: an Evaluation of the Curriculum in Agricultural Education at The Ohio State University." Columbus, Ohio: Department of Agricultural Education, College of Agriculture, Ohio State University, 1958. 196 pp.

This book, developed from a series of five carefully designed studies, presents a summation of appraisals concerning the effectiveness of the curriculum of a teacher-education department. The series of studies might be considered as a progress report to be used as a guide for additional evaluative work in the future, just as the five studies were partially designed to supplement at least nine previously completed individual evaluation studies concerning the curriculum of the Department of Agricultural Education at Ohio State University.

The stated purpose of the reported studies "was to discover from a variety of sources and by a variety of means how well the total program

of preparation for vocational agricultural teachers has been serving its function" (page 5). Evaluation instruments were developed to obtain appraisals from school administrators, former graduates, undergraduates then enrolled in the curriculum, non-school professional personnel, and college faculty members.

This attempt to evaluate a department's own performance seems to have been relatively free of the usual dangers of "self-evaluation." The design of the studies and the careful planning which went into the development of instruments served to remove much possible bias in the respondents' opinions.

The instruments used were not particularly complex. Some persons may question the adequacy of those three-way responses which tend to give only very rough positive or negative opinion. The quantitative handling of the data collected was not entirely satisfactory in that the degree or "depth" of the response was not fully explained; in several instances a more qualitative type of data would have seemed better. It is true, however, that the use of open-end response items tends to alleviate this objection to some extent.

A member of a university faculty will find in this book many suggestions for evaluation of his own department's curriculum. The critical questions asked, the answers proposed by the evaluation, and the recommendations to others who may decide to study their departmental programs by use of similar appraisals of the curriculum and its outcomes merit careful reading and study.

E. E. CLANIN
Purdue University

PERDEW, PHILIP W. *The American Secondary School in Action*. Boston: Allyn and Bacon, Inc., 1959. xii + 352 pp.

This book is addressed to the prospective teacher and is intended to help him understand the theory and practice of secondary-school teaching. The concept of practice is emphasized most, however, for the author's central purpose is to relate education courses more closely to laboratory experiences in the schools.

The book is divided into eleven chapters, each of which concludes with a list of vocabulary words, discussion questions, suggested activities, and a helpful and up-to-date bibliography. In the opening chapter the author includes a brief introduction to the secondary school in America and describes the functions of various school personnel. In the next chapter the nature of the adolescent is considered together with the school's role in helping him to resolve a selected number of developmental tasks. The next five chapters contain the core of the textbook. They are concerned largely with the work of the teacher and include discussions of planning, teaching methods, curriculum, classroom guidance, and appraising pupil progress. The remaining four chapters are devoted to the his-

tory and philosophy of secondary education, the relation of the school to society, and the preparation, duties, and characteristics of the secondary-school teacher.

The reader should find the treatment of preplanning and the definitions and discussion of various phases of unit teaching especially helpful. Mr. Perdew has offered usable suggestions for the improvement of assign-study-recite methods in contrast to the outright rejection of these often found in educational literature. While pupil-teacher planning is advocated, much more attention is given to preplanning by the teacher.

The treatment of various curriculum areas is of special interest; however, there is limited concern with questions of design and with the organization of learning experiences which directly emphasize democratic behaviors. In general, the more theoretical aspects of secondary education —philosophy, learning theory, and sociological foundations—are somewhat sketchily presented. Possibly this is the result of the author's obvious efforts to keep his presentation as simple and clear as possible for the benefit of the prospective teacher.

This book, supplemented by the recommended readings, should prove to be a valuable aid to the instructor as well as a highly readable and informative textbook for the student.

DALE L. KNAPP
Los Angeles State College

Claremont College Reading Conference: Twenty-Third Yearbook, 1958. Claremont, California: Claremont College Curriculum Laboratory, 1958. 194 pp.

This yearbook contains the speeches made at the twenty-sixth (apparently this is only the twenty-third one published) annual session of the Claremont Reading Conference held during July 7–11, 1958. In addition to the designated theme of the conference—"Reading: the Process of Making Discriminative Reactions"—a second and more specific theme announced for the sessions was "Reading in a Geophysical Age."

A particularly wide range of topics was covered at this conference. Among these were "The Development of International Understanding"; "Russia: a Problem to Be Solved"; "Reading as the Earth Writes"; "Reading Glaciers and Their Influence on Man's Environment"; "Spheres of Influence on Man's Environment"; "Reading Human Behavior"; "Reading Personalities Through Handwriting Analysis"; "What About Seeing for Reading in a Scientific Age?"; "Aural Interpretation: a Basic Approach to Reading for the Deaf Child"; "The Edge of Mystery"; and "Reading Without Light."

The participants were specialists from many fields rather than just those particularly conversant with problems in teaching reading. The reviewer believes that these speeches represent an interesting collection of lectures that might be given to a summer-session audience, but their relationship to the field of reading is at times rather tenuous.

F. P. ROBINSON

RECENT PUBLICATIONS

OF THE COLLEGE OF EDUCATION

The Challenge of the Present to Public Education

By VIVIAN T. THAYER. The Boyd H. Bode Memorial Lectures, 1958. vii + 41 pp. 1959. $1.00

The former director of the Ethical Culture Schools in New York City discusses: "Dangers Confronting Education Today" and "The Task of Today's School."

School-Community Attitude Analysis for Educational Administrators

By ROBERT P. BULLOCK. The School-Community Monograph Series, No. 7. xi + 112 pp. 1959. Lithoprinted. $2.00

The purpose of this study was to develop and test a battery of scales for the use of the school administrator in determining attitudes of the community toward the schools.

How to Improve the High-School Curriculum

By HAROLD ALBERTY AND ASSOCIATES. iv + 86 pp. 1959. Lithoprinted. $1.00

This is a resource guide for curriculum workers. It deals with such topics as "Creating a Feeling of Need for Improving the Curriculum," "Determining the General Design of the New Curriculum," and "Discovering and Organizing Resource Materials for Instruction."

An Elementary Survey of Ceramic Processes: with an Emphasis on Clay Products.

36 pp. 1960. 50 cents.

This is a revised edition of a manual that has proved its usefulness for high-school and college students.

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Orders should be addressed to Publications Office, Ohio State University, 242 W. 18th Avenue, Columbus 10, Ohio.